Environmental Fact Sheet

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1999 Evergreen Award For Pollution Prevention

ARCO Alaska - Kuparuk River Oil Field

The Environmental Protection Agency's 1999 Evergreen Award for Pollution Prevention recognizes the outstanding pollution prevention efforts of ARCO Alaska's Kuparuk River Oil Field.

Located on 400 square miles near the Beaufort Sea in northern Alaska, the Kuparuk River Oil Field is the second largest oil field in North America with an estimated two billion barrels of recoverable oil reserves. In addition to supporting remote oil production, Kuparuk Field's operation also provides all community services necessary to house up to 1,000 employees to accomplish the industrial activities.

Due to its isolated location, waste management is an expensive cost of doing business: the nearest landfill is 50 miles away and charges $1300 per dumpster. Hazardous wastes must be shipped 2,000 miles away for handling– and onsite waste management must deal with freezing conditions and expensive equipment costs.

Pollution prevention is therefore a key consideration to reduce impacts both on the environment and on "the bottom line." Initiated by a grassroots staff effort in the late 1980's, Kuparuk's guiding philosophy maintains that: "If no waste is generated, nothing needs to be collected, transported or managed."

Pollution Prevention Success

The all-volunteer **Group For Environmental Enhancement at Kuparuk** (GEEK) focused its waste reduction efforts initially on individual responsibility:

- They initiated consolidated recycling of paper, newspaper and aluminum cans.
- The group gradually targeted other lifestyle habits to reduce-reuse-recycle, such as using glass dishes instead of Styrofoam plates and utensils, installing low-flow shower heads and providing variable-level washing machines in the living areas.
- Within the administrative offices, using electronic communication reduces paper waste, while reconditioning laser printer toner cartridges saves up to $13,000 annually and reduces 43 pounds of solid waste over the life of each recycled cartridge.

Pollution Prevention Success, continued

The **Materials Department** maintains more than 258,000 square feet of available storage space, and a $38 million inventory.

- All necessary chemical products are bulk-ordered in railroad cars and reusable containers to reduce transportation and warehousing costs. Empty storage drums that were previously burned are now washed and recycled, and washwaters are recirculated in oil recovery operations.

- Wooden pallets, industrial grade batteries and other materials are reused among various job sites. Scrap wood from drill sites is donated, saving Kuparuk $60,000 in disposal costs annually.

- Narrow metal banding strips used when transporting freight are now put through a grinder that chops the band into small pieces, which are then sent to the scrap metal dealers. This saves approximately $5,000 annually in disposal costs.

The **Fleet Maintenance Department** oversees more than 800 vehicles and heavy equipment:

- Lube oil, antifreeze and lead acid vehicle batteries used for fleet maintenance are recycled; a hot water washer replaced a parts-washer that used solvent. A rag wash ing service has eliminated the yearly generation of approximately 8,000 pounds of waste rags that needed disposal.

- With help from a manufacturer, reusable oil filters developed to meet Kuparuk's vehicle specifications eliminate waste filters, and also help pinpoint needed repairs when metal particles are found in the filter screen; this program has saved an estimated $45,000 in vehicle repairs. Washable air filters on vehicles save $4,100 annually. Old tires, previously sent to a landfill, are sent to the distributer for retreading, and then returned to service at Kuparuk.

Construction in the arctic oil field presents a different set of pollution prevention opportunities. New oil drill sites require the building of new roads, gravel staging pads and well houses:

- Reducing the size of the pad from 65 acres to 11 acres has cut the overall wetland impact, and reduces gravel needs to construct the site.

- Gravel roads sufficient to handle the heavy equipment are typically built at a cost of $800,000 per mile; replacing gravel by using temporary snow or ice roads up to 8 feet thick reduces the cost per mile to just $21,000.

- Site Development staff determined a way to build well houses more efficiently, cutting the cost and material necessary for construction by 50%.

Pollution Prevention Success, continued

- To prevent impacts from oil spills, gravel-covered oil drilling pads are sprayed with water each fall until several inches of ice builds up; this protective layer prevents small spills from contaminating the gravel surface. In the event of a spill, contaminated ice is chipped up, melted and the fluids recycled. Similarly, ice and snow roads with evidence of oil spillage can also be easily cleaned up. Other innovations: vinyl and sorbent pad "splints" are wrapped around hydraulic oil lubricators on drill equipment to prevent inadvertent leaking.

- On-site production laboratories now reuse solvents necessary for analytical purposes; toluene use, for example, was reduced by 90% during the first year of this program.

- Stainless steel valves are now repaired instead of discarded, saving $265,000 per year and eliminating almost 3,000 pounds of waste.

- Monitoring the pipeline for corrosion uses metal wafers to measure corrosion. A new process to clean the wafers now recycles necessary chemicals and is done by mechanical means, reducing employee exposure to toxic chemicals as well as the volume of leftover toxic waste– and saving approximately $16,000 in disposal costs annually.

- Kuparuk's Drilling Staff have specified to manufacturers that oil drilling pipes be sent with a non-lead-based compound protecting the pipe threads, eliminating the need to use solvents to clean the threads.

- Oil-based lubricating "muds" (used during drilling to suspend rock cuttings in "solution" and bring them to the surface) have been replaced whenever possible with water-based mud systems, and are now themselves recycled through a closed- loop system that filters out rock cuttings; these changes eliminate almost 3,000 cubic yards of surface discharges from the drill site each year and lessens the amount of mud used for each project.

- Modifying the procedure for cleaning the inside of water injection pipelines has eliminated surface discharge of oily water and sludge by re-injecting the recovered fluids and solids, and saves $290,000 in reduced labor and equipment costs.

- Saltwater brine, used to counterbalance pressure inside the wellbore to maintain equilibrium, is now reclaimed and reused at least two times; not only does this reduce the amount of waste brine per well, it saves more than $1.8 million per year.

Commitment to Environmental Quality

A cornerstone of Kuparuk's waste management strategy is a strong belief in environmental stewardship. ARCO Alaska's commitment to protect human health and environment, prevent the need for future cleanup, and reduce operating costs shows through the innovative ways each Kuparuk department found to reduce its waste. Training for staff at all levels ensures that wise waste management decisions are made in the field. **For more information about ARCO Alaska-Kuparuk River Unit's environmental achievements, contact the Kuparuk Field Environmental Coordinator at (907) 659-7242.**